

Customer No.: 31561
Application No.: 10/711,863
Docket No.: 14098-US-PA

To the Claims:

Please amend the claims as follows:

Claim 1 (previously amended) A method of forming conductive column in a fabrication of a circuit board, the circuit board comprising a dielectric layer formed thereon, the method comprising:

forming a first blind hole in a first surface of the dielectric layer;

forming a second blind hole in a second surface of the dielectric layer opposite to the first surface, a blind end of the first blind hole connecting to a blind end of the second blind hole, the first blind hole and the second blind hole constituting a through hole, wherein an inner diameter of the through hole near the first surface or the second surface is substantially larger than an inner diameter of the through hole near a middle portion of the through hole; and

filling a conductive material in the through hole, wherein the conductive material fills with the through hole from a position where the blind ends of the first and second blind holes connect with each other and extends towards two ends of the through hole to form a conductive column.

Claim 2 (original) The method of forming conductive column of claim 1, wherein the first blind hole and the second blind hole have a cone shape, and the through hole and the conductive column have an hourglass shape.

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Claim 3 (original) The method of forming conductive column of claim 1, wherein the circuit board further comprises a first conductive layer disposed over the first surface of the dielectric layer, and after forming the first blind hole in the dielectric layer, the first blind hole is passed through the first conductive layer.

Claim 4 (original) The method of forming conductive column of claim 3, wherein the circuit board further comprises a second conductive layer disposed over the second surface of the dielectric layer, and after forming the second blind hole in the dielectric layer, the second blind hole is passed through the second conductive layer.

Claim 5 (original) The method of forming conductive column of claim 1, wherein the first blind hole is formed by a mechanical drilling method.

Claim 6 (original) The method of forming conductive column of claim 5, wherein the second blind hole is formed by a mechanical drilling method.

Claim 7 (original) The method of forming conductive column of claim 1, wherein the first blind hole is formed by a laser drilling method.

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Claim 8 (original) The method of forming conductive column of claim 7, wherein the second blind hole is formed by a laser drilling method.

Claim 9 (original) The method of forming conductive column of claim 1, wherein the step of filling the conductive material comprises plating process.

Claim 10 (canceled)

Claim 11 (currently amended) A circuit board fabricated by the method of forming conductive column of claim 1, comprising:

a dielectric layer, having a first surface, a second surface opposite to the first surface ~~and at least one through hole~~, a first blind hole formed in the first surface of the dielectric layer and a second blind hole formed in the second surface of the dielectric layer, a blind end of the first blind hole connecting to a blind end of the second blind hole, the first blind hole and the second blind hole constituting a through hole, wherein the through hole passes through the dielectric layer, and an inner diameter of the through hole near the first or the second surface is substantially larger than an inner diameter of the through hole near a middle portion of the through hole; and

at least one conductive column, disposed in the through hole and formed by a conductive material filling with the through hole from a position where the blind ends of the first and second

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blind holes connect with each other and extend toward two ends of the through hole, a shape of the conductive column being substantially consistent to a shape of the through hole, wherein the through hole and the conductive column have an hourglass shape.

Claim 12 (canceled)

Claim 13 (currently amended) A circuit board fabricated by the method of forming conductive column of claim 3, comprising:

a dielectric layer, having a first surface and a second surface opposite to the first surface;
and

a first conductive layer, disposed over the first surface of the dielectric layer, a first blind hole formed in the first surface of the dielectric layer after passing through the first conductive layer and a second blind hole formed in the second surface of the dielectric layer, a blind end of the first blind hole connecting to a blind end of the second blind hole, the first blind hole and the second blind hole constituting a through hole, wherein ~~a the through hole is formed in the first dielectric layer and the first conductive layer passing~~ passes through the dielectric layer and the first conductive layer, and an inner diameter of the through hole near the first or the second surface is substantially larger than an inner diameter of the through hole near a middle portion of the through hole; and

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at least one conductive column, disposed in the through hole and formed by a conductive material filling with the through hole from a position where the blind ends of the first and second blind holes connect with each other and extend toward two ends of the through hole, a shape of the conductive column being substantially consistent to a shape of the through hole, wherein the through hole and the conductive column have an hourglass shape.

Claim 14 (cancelled)

Claim 15 (previously amended) A circuit board of claim 13, further comprising a second conductive layer disposed over the second surface of the dielectric layer, wherein the through hole passes through the second conductive layer.

Claim 16 (previously amended) The method of forming conductive column of claim 1, wherein the conductive column is a solid column full of the through hole.

Claim 17 (previously amended) The circuit board of claim 11, wherein the conductive column is a solid column full of the through hole.

Claim 18 (previously amended) The circuit board of claim 13, wherein the conductive column is a solid column full of the through hole.